

Atlanta's Vehicle Instrumentation and Activity Monitoring Programs: 2007 Update

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Commute Atlanta Program (2004-2007)

- Phase I - Recruit households, instrument vehicles, and collect baseline travel behavior
- Phase 2 - Implement cent/mile incentives
 - Q1 (5 ¢/mile), Q2 (10 ¢/mile), Q3 (15 ¢/mile)
 - Participants that carpool, take transit, or travel more efficiently receive financial incentives
- Phase 3 - Implement congestion-based pricing incentives
 - Participants that reduce travel or shift out of peak period congestion receive financial incentives
- Evaluate consumer response to the economic stimulus across demographic and socioeconomic strata

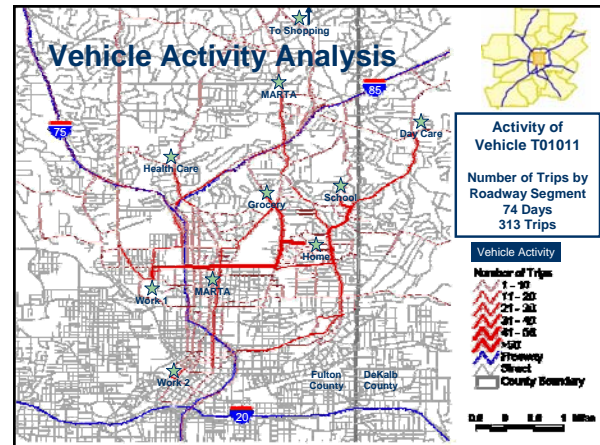
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2003 GT Trip Data Collector



- CPU: 386 Linux
- Vehicle speed sensor
- Global positioning system
- Onboard diagnostics (OBD) engine computer connection
- Cellular transceiver
- Second-by-second speed and position provide origin, destination, and route

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Commute Atlanta Data Collection January 2004 – June 2006

1.5 million trips, 425,000 vehicle hours, 11 million vehicle-miles

Study Period	Jan.-Jun. 2004	Jul.-Dec. 2004	Jan.-Jun. 2005	Jul.-Dec. 2005	Jan.-Jun. 2006
Vehicles Monitored	460	430	390	300	300
Trips Collected	365,335	331,164	292,494	226,982	240,732
Vehicle Hours Monitored	105,798	95,902	85,494	68,065	69,714

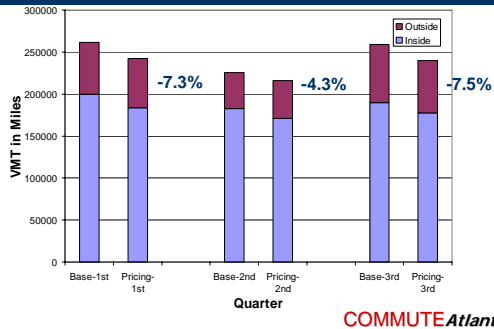
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Phase II Household Mileage Change

- 102 households participated in Phase II pricing
 - Q1 (5 ¢/mile), Q2 (10 ¢/mile), Q3 (15 ¢/mile)
- 80 households participated in all three quarters
 - 17 households demonstrated consistent mileage reduction across all three quarters
 - 8 households began to reduce mileage 2nd quarter
 - 10 households began to reduce mileage 3rd quarter
 - 10 households demonstrated a consistent mileage increase across all three quarters
 - 35 households displayed no consistent patterns in mileage increase or decrease

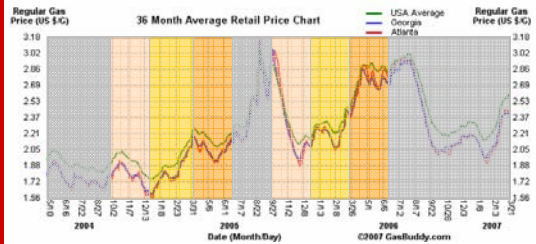
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Quarterly VMT 55 households (analysis complete)



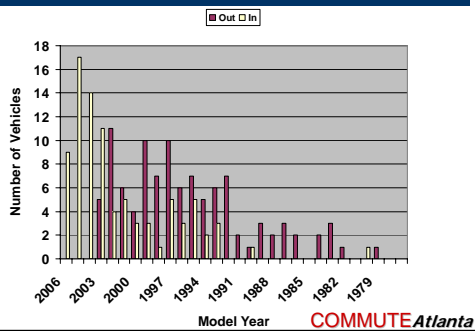
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Gasoline Prices



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Commute Atlanta Vehicle Turnover (104 Vehicles Out, 88 Vehicles In)



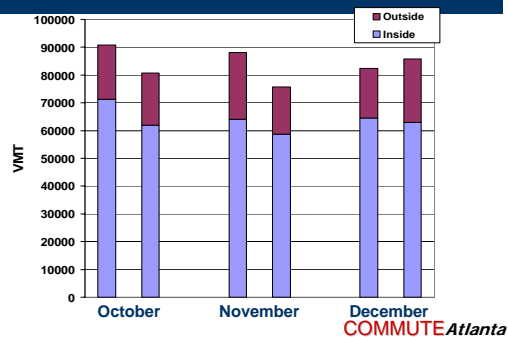
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1st Quarter Response (- 7.3%)

- Holiday season
 - Thanksgiving and Christmas travel
- Gas prices dropping during baseline from \$1.90 to \$1.56
- Immediately prior to the pricing, post hurricane Katrina (August into October), gas prices jumped to \$3.20
 - VMT reductions noted in September prior to pricing
 - The \$1.50/gallon increase is around \$0.075/mile
- Pricing begins in October at \$0.05/mile
- Gas prices drop to \$1.90/gallon by December
- Net VMT reduction was 7.3%

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1st Quarter VMT Change by Month Baseline Year vs. Pricing Year



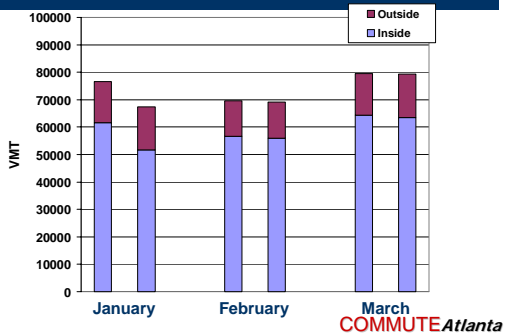
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2nd Quarter Response (- 4.3%)

- Winter season
- Gas prices rose steadily during the baseline period from \$1.50 to \$2.00
- Gas prices fairly stable during pricing period
 - Prices went from \$2.20 to \$2.00 to \$2.40
 - Prices rose right at end of quarter to \$2.40
- Incentive increased to \$0.10/mile
- Net VMT reduction was 4.3%
 - Entire reduction comes from January

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2nd Quarter VMT Change by Month Baseline Year vs. Pricing Year



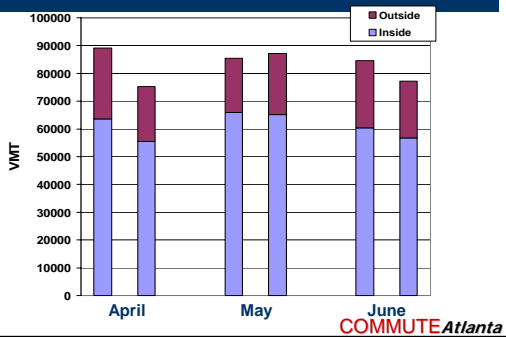
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3rd Quarter Response (- 7.5%)

- Spring/summer season
- Gas prices were stable during baseline period at around \$1.90 to \$2.10
- Average gas prices rose again during first month of pricing from \$2.40/gallon to \$2.80/gallon
- Incentive increased to \$0.15/mile
 - Might be comparable to a \$3.00/gallon price increase
- Net VMT reduction was 7.5%
 - Significant reduction noted in April
 - VMT increased in May
 - Reduction also noted in June

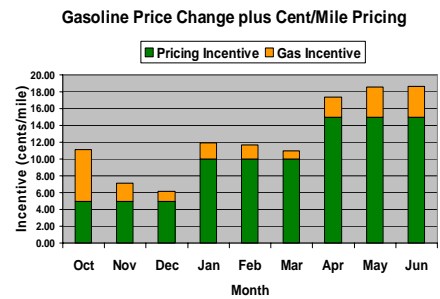
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3rd Quarter VMT Change by Month Baseline Year vs. Pricing Year



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Incentive Contribution



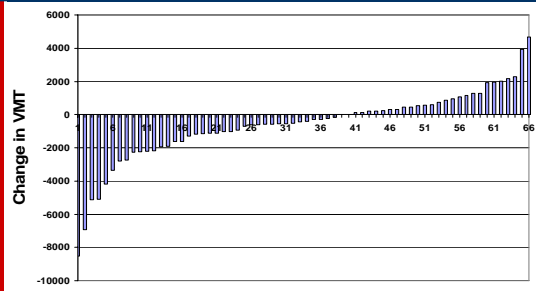
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General Response Discussion

- VMT exhibits seasonal variability
- Gas price was volatile during baseline and pricing
 - Pricing dominates the total incentive in 2nd and 3rd quarters relative to gas price change
- For each quarter, a decrease in VMT appears to be correlated with increasing gas prices and incentives, with a potential rebound effect
 - VMT reductions are highest in 1st and 3rd quarters with higher gas prices
 - VMT reductions noted in the first month of 2nd and 3rd quarters (when incentives increased by 5 cents/mile)

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Variability in Household VMT Change (5 Months, 66 Households)



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Pricing Response Uncertainty

- Significant variability in household response coupled with small sample sizes across demographic groups
- No hard conclusions can be drawn yet
 - Case study approach currently underway
 - Control for changes in demographics such as HH size, employment, change in school locations, etc.
 - Comparing intraregional vs. extra-regional changes
 - Changes are being compared by trip purpose
- New project includes in-home interviews of 16-20 Commute Atlanta households to review travel patterns and response to incentives

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Real Time Congestion Pricing Summer 2007

- Instrument vehicles for 120 to 150 commuters that regularly use southbound I-75, I-85, GA400 corridors
- Upgraded equipment allows real-time tracking and in-vehicle communication
- Household recruitment in April, June to August pricing
- Real-time congestion pricing
 - \$0.40/mile under congestion vs. \$0.15/mile free flow
- If households reduce mileage or shift their trips out of congested periods they receive financial reward

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Commute Atlanta In-Vehicle Data Terminal Displays Pricing Info



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Speed vs. Speed Limit Feedback +5mph (yellow) and +10mph (red)



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Commute Atlanta Summary

- Systems provide a wealth of useful, high-resolution data
 - 2.5 Tb of data
- Atlanta studies are evaluating:
 - Pricing impacts on household travel behavior
 - Driver behavior and safety
 - Travel demand modeling implications
 - Use of data in traffic operations management
 - Speeding, vehicle emissions, and fuel consumption
 - Start/soak and VSP reports forthcoming from EPA
- Tremendous data mining opportunities remain

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